

WHAT IS CLAIMED IS:

1. A method of point matching measured points to template points; said method comprising:  
acquiring measured data representing a set of measured point locations;  
comparing said set of measured point locations to template data representing a set of  
5 template point locations;  
defining force field vectors operative to perturb said measured point locations into  
alignment with said template point locations; and  
responsive to said defining, matching measured point locations to template point  
locations.  
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2. The method of claim 1 wherein said matching comprises utilizing a many-on-many point  
matching algorithm.
3. The of claim 2 wherein said utilizing comprises determining offsets, rotations, and  
15 position errors between said measured point locations and said template point locations.
4. The method of claim 1 wherein said matching comprises utilizing a one-to-one point  
matching algorithm.
- 20 5. The of claim 4 wherein said utilizing comprises determining offsets, rotations, and  
position errors between said measured point locations and said template point locations.
6. The method of claim 1 wherein said defining comprises creating said force field vectors  
to act over a prescribed range.  
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7. The method of claim 6 wherein said creating comprises, for distances greater than said  
prescribed range, dissipating a magnitude of said force field vectors with increasing distance.
8. The method of claim 6 wherein said creating comprises, for distances shorter than said  
30 prescribed range, increasing a magnitude of said force field vectors with increasing distance.
9. The method of claim 6 further comprising selectively repeating said comparing, said  
defining, and said matching.

10. The method of claim 9 wherein said selectively repeating comprises selectively decrementing said prescribed range at each successive iteration of said defining.

5 11. A computer readable medium encoded with data and instructions for point matching measured points to expected points; said data and said instructions causing an apparatus executing said instructions to:

acquire measured data representing a set of measured point locations;

10 compare said set of measured point locations to reference data representing a set of expected point locations;

define force field vectors and moment arms operative to perturb said measured point locations into alignment with said expected point locations; and

selectively repeat:

15 comparing, to said reference data, said measured point locations perturbed by said force field vectors and said moment arms; and

redefining said force field vectors and said moment arms responsive to said comparing;

until predetermined convergence criteria have been satisfied.

20 12. The computer readable medium of claim 11 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to compare said set of measured point locations to said set of expected point locations utilizing a many-on-many point matching algorithm.

25 13. The computer readable medium of claim 12 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to determine offsets, rotations, and position errors between said measured point locations and said expected point locations.

30 14. The computer readable medium of claim 11 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to compare said set of measured point locations to said set of expected point locations utilizing a one-to-one point matching algorithm.

15. The computer readable medium of claim 14 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to determine offsets, rotations, and position errors between said measured point locations and said expected point locations.

16. The computer readable medium of claim 11 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to create said force field vectors to act over a prescribed range.

17. The computer readable medium of claim 16 further encoded with data and instructions; said data and said instructions further causing an apparatus executing said instructions to decrement said prescribed range at each successive iteration of said redefining.

18. A method of measuring probe locations in a probe card analyzer system; said method comprising:

acquiring measured data representing a set of probe point locations;

comparing said set of probe point locations to reference data representing a set of expected point locations;

responsive to said comparing, defining force field vectors and moment arms operative to perturb said probe point locations into alignment with said expected point locations; and

selectively repeating:

computing modified probe point locations representative of said probe point locations perturbed by said force field vectors and said moment arms; and

redefining said force field vectors and said moment arms responsive to said computing;

until predetermined convergence criteria have been satisfied.

19. The method of claim 18 wherein said acquiring comprises utilizing an imaging apparatus.

20. The method of claim 18 wherein said computing comprises determining offsets, rotations, and position errors between said probe point locations and said expected point locations.

5 21. The method of claim 18 wherein said defining and said redefining comprise creating said force field vectors to act over a prescribed range.

22. The method of claim 21 wherein said redefining comprises decrementing said prescribed range at each successive iteration of said redefining.

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